Module 1: Introduction to CERT

Lesson 4: CERT Sizeup

Self-Study Guide

March 2004

Lesson Overview

Lesson Purpose

This lesson introduces you to the data-gathering process known as "sizeup." The data gathered through sizeup is used to make decisions to determine if it is safe for CERT members to take action, the actions that they should take, and in what order.

Lesson Objectives

After completing this lesson, you should be able to:

- Define sizeup.
- Identify the steps required for a good sizeup.
- Understand how sizeup information is used to determine CERT actions.

Estimated Time

30 minutes

Contents

This lesson includes the following sections:

Lesson Overview

Completing the steps in a sizeup is the way that CERTs gather, assess, and communicate damage information; determine whether it is safe to take action; and determine what actions to take.

A thorough sizeup can make the response safer and more efficient by:

- Identifying potential hazards.
- Identifying needs.
- Prioritizing actions based on safety, capabilities, and resource requirements and doing the greatest good for the greatest number of people.

What Is Sizeup?

Sizeup is an ongoing process used to answer the question, "Is it safe for CERT members to attempt this task?"

- What hazards are present?
- What is the level of damage?
- What are the dangers to team safety?
- What can the team do based on their training and resources?
- How could conditions change and affect safety?

CERT leaders use sizeup to make good decisions about what actions teams should take.

Sizeup Steps

The nine steps involved in sizeup are:

1. Gather facts.
2. Assess and communicate the damage.
3. Consider probabilities.
4. Assess your own situation.
5. Establish priorities.
6. Make decisions.
7. Develop plans of action.
8. Take action.
9. Evaluate progress.

Each of these steps will be described in this lesson.

Step 1: Gather Facts

Facts about the situation will guide all CERT efforts. Some of the facts that CERT members should always consider are the:

- Time of day and day of the week that the disaster occurred.
- Type and extent of damage.
- Types of structures damaged.
- Weather conditions.
- Other hazards.

Time of Day and Day of Week

Populations shift by the time of the day and the day of the week. At night and on weekends, more victims are likely in residential neighborhoods. During working hours, more victims are likely in commercial buildings. Because CERTs operate in areas where they live or work, team members know much of this information.

Some emergency services are not available, or are not available in the same numbers, during the evenings or on weekends.

CERT operations may also be affected by where people are located in their homes (for example, the bedroom versus the family room) and by the amount of daylight available.

Type and Extent of Damage

Assessing the type and extent of damage as light, moderate, or heavy (defined below) will tell CERT members what, if anything, they should do and what resources they will need for the job. For example:

- CERT members should never enter heavily damaged structures—structures that have fully or partially collapsed or have been moved off of their foundations.
- CERT members should never enter areas that are flooded.
- If utilities are damaged and can be shut off safely from the outside, CERT members can try to shut them off.
- A disaster that causes many injuries will require CERT members to perform medical triage and treatment.

Damage

The table below shows the general guidelines for assessing damage.

Type of Damage	Characteristics
Light	▪ Superficial damage ▪ Broken windows ▪ Fallen or cracked plaster ▪ Minor damage to interior contents
Moderate	▪ Visible signs of damage ▪ Decorative work that is damaged or has fallen ▪ Visible cracks in plaster ▪ Major damage to interior contents
Heavy	▪ Partial or total collapse or tilting ▪ Obvious structural instability ▪ Heavy smoke or fire, known hazardous materials (e.g., gas leaks), or rising or moving water

Types of Structures Damaged

Some types of structures are more dangerous because they are more susceptible to damage than others. Older structures and structures with long roof spans are examples. Some structures may contain hazardous materials.

The type of structure and its purpose can also tell:

- The number of people who may be trapped inside. For example, there is a much higher probability of multiple victims being trapped inside a shopping mall than inside a private home.
- Whether other hazards may exist. Structures designed for industrial uses carry a higher risk of other hazards such as hazardous materials.

Weather Conditions

Severe or extreme weather will have an effect on victims and rescuers alike and must be considered during rescue operations. Forecasts for severe or extreme weather (hot or cold) should serve as a limiting factor on the time period during which:

- CERT operations can continue.
- Victims can be exposed to the elements without additional adverse effects.

Other Hazards

Because the safety of CERT members is always the first priority, information gathered about other hazards that may be present at the scene can affect whether CERTs take action at all.

For example, CERT members should never:

- Attempt to operate where hazardous materials are present.
- Enter an area where water is running or that is flooded.
- Operate where there are other hazards that pose a threat to CERT member safety.

Knowledge Review

Instructions: Read the scenarios below and select the most important facts to report to the Team Leader. Select ALL that apply. When you are finished, turn to the next page to check your answers.

1. You are on your way to the CERT staging area. The wind is from the southwest. You notice that two homes have been moved off of their foundations, and four have visible signs of damage to the exterior. You cannot see anyone who is injured. You know that elderly couples live in two of the homes with visible damage to the exterior.

   - ☐ Two homes have been moved off of their foundations.
   - ☐ Four homes have visible damage to the exterior.
   - ☐ The wind is from the southwest.
   - ☐ You cannot see anyone who is injured.
   - ☐ Elderly couples live in two of the homes with visible damage to the exterior.

2. A home that you pass while traveling to the CERT staging area has visible damage to the exterior. You know the woman who lives here and her disabled son, but you do not know if they are home. The home appears moderately damaged to you. You also smell a strong odor of gas in the neighborhood. You are concerned about additional damage from aftershocks.

   - ☐ The home has visible damage to the exterior.
   - ☐ A disabled person lives in this home.
   - ☐ There is an odor of gas in the neighborhood.
   - ☐ Aftershocks could further damage the home.

Knowledge Review: Answer Key

Instructions: Compare your answers to those shown below.

1. You are on your way to the CERT staging area. The wind is from the southwest. You notice that two homes have been moved off of their foundations, and four have visible signs of damage to the exterior. You cannot see anyone who is injured. You know that elderly couples live in two of the homes with visible damage to the exterior.

   - ☑ **Two homes have been moved off of their foundations.**
   - ☑ **Four homes have visible damage to the exterior.**
   - ☐ The wind is from the southwest.
   - ☑ **You cannot see anyone who is injured.**
   - ☑ **Elderly couples live in two of the homes with visible damage to the exterior.**

2. A home that you pass while traveling to the CERT staging area has visible damage to the exterior. You know the woman who lives here and her disabled son, but you do not know if they are home. The home appears moderately damaged to you. You also smell a strong odor of gas in the neighborhood. You are concerned about additional damage from aftershocks.

   - ☑ **The home has visible damage to the exterior.**
   - ☑ **A disabled person lives in this home.**
   - ☑ **There is an odor of gas in the neighborhood.**
   - ☐ Aftershocks could further damage the home.

   Each of these pieces of information is a life-safety issue for CERT members and people who may be in the house.

Step 2: Assess and Communicate Damage

There are several general guidelines for assessing and communicating damage.

When in doubt about the condition of a building, CERT members should always use the more serious damage assessment. **If unsure about whether a structure is moderately or heavily damaged, CERTs should assume heavy damage. This is because what CERTs do depends on whether a building is lightly, moderately, or heavily damaged. CERT members should always put safety first.**

CERT Mission: Light Damage

Light damage to a structure is indicated by:

- Superficial or cosmetic damage.
- Broken or cracked plaster.
- Minor damage to the interior contents.

If these types of damage occur, the CERT mission should be to locate, triage, and treat victims. Prioritize the removal of victims to a medical treatment area.

Example of light damage:

Damage to this structure is limited to missing shingles. The structure remains on its foundation, and there is no other damage apparent.

CERT Mission: Moderate Damage

Moderate damage to a structure is indicated by:

- Decorative work damaged or fallen.
- Many visible cracks in plaster.
- Major damage to interior contents.

If these types of damage occur, the CERT mission should be to locate, triage, and evacuate victims. Minimize the number of rescuers and time inside the structure.

Example of moderate damage:

Although the outside sheathing of the gable end of this structure has fallen, there is no indication of damage to the roof truss system, and the structure remains on its foundation. Further inspection from the outside shows utilities are not damaged. This structure is moderately damaged.

CERT Mission: Heavy Damage

Heavy damage to a structure is indicated by:

- Partial or total collapse or tilting.
- Obvious structural instability.
- Movement off foundation.

If these types of damage occur, the CERT mission should be to warn others of the danger. **Never enter heavily damaged structures.** If possible, shut off utilities from the outside, and collect information to give to professional responders.

Example of heavy damage:

This structure has obvious damage to the wall and roof systems, which may lead to structural instability. When in doubt about the level of damage, CERT members should always assume heavy damage.

Knowledge Review

Instructions: For each question, select the answer that best estimates the level of damage to the building described. When you are finished, turn to the next page to check your answers.

1. A residential structure has collapsed onto cars that were parked underneath it.

   ☐ Light damage
   ☐ Moderate damage
   ☐ Heavy damage

2. The interior of a school has major damage to furnishings, ceiling tiles, and other nonstructural features.

   ☐ Light damage
   ☐ Moderate damage
   ☐ Heavy damage

3. The structure has suffered major roof collapse.

   ☐ Light damage
   ☐ Moderate damage
   ☐ Heavy damage

Knowledge Review: Answer Key

Instructions: Compare your answers those ones shown below.

1. A residential structure has collapsed onto cars that were parked underneath it.

   ☐ Light damage
   ☐ Moderate damage
   ☑ **Heavy damage**

   The correct level of damage is **heavy damage.** A structure that has collapsed or partially collapsed is always considered heavily damaged. **Remember, CERT members should never enter heavily damaged structures.**

2. The interior of a school has major damage to furnishings, ceiling tiles, and other nonstructural features.

   ☐ Light damage
   ☑ **Moderate damage**
   ☐ Heavy damage

   The correct level of damage is **moderate damage.** Damage assessment is made based on the condition of the structure itself. Moderately damaged buildings may have major damage to the interior contents.

3. The structure has suffered major roof collapse.

   ☐ Light damage
   ☐ Moderate damage
   ☑ **Heavy damage**

   The correct level of damage is **heavy damage**. A major roof collapse is considered heavy damage. **Heavily damaged structures pose a great risk and should not be entered.**

Step 3: Consider Probabilities

CERT members work in close proximity to dangerous situations. It is important to consider what could happen.

CERTs must identify potentially life-threatening risks with an eye toward:

- How stable the situation really is.
- What else could go wrong.
- What it all means for CERT activities.

How Stable the Situation Really Is

After taking a lap around a structure (i.e., walking around the entire building, if possible), it may appear to have only light or moderate damage. However, nonstructural damage or instability inside the structure can pose real danger to CERT members. Rescuers need to evaluate their surroundings for changing situations. Do not get tunnel vision. Be sure to look up, down, and around for dangerous situations.

Think about what you already know about the structure that has been damaged. For example:

- Homes may have hazardous materials such as lawn chemicals, paints, or other potentially hazardous materials stored within the structure.
- Furniture, bookcases, and hanging fixtures may be unstable.
- Electric and gas lines could be damaged.

It does not take long to answer these types of questions, but the answers could make a huge difference in how CERT members approach their activities.

What Else Could Go Wrong?

Based on information gathered during Steps 1 and 2 of the sizeup, take a few moments to play "What if . . .?" to try to identify additional risks that you and your buddies may face. For example:

- What if there is an aftershock?
- What if you smell or see smoke?
- What if a wall that appears stable shifts and collapses?
- What if the electricity fails while CERT members are in the building?

Applying "Murphy's Law" to the situation could save CERT members' lives.

What It All Means for CERT Activities

Based on the probabilities, think about what can be done to reduce the risks associated with those probabilities. For example:

- Is a spotter necessary to look for movement that could indicate a possible collapse and warn CERT members?
- Is some remedial action required to stabilize nonstructural hazards before beginning the search?

Remember, CERT member safety is the first priority!

Knowledge Review

Instructions: Read the following scenarios and select ALL of the probabilities that you should consider. When you are finished, turn to the next page to check your answers.

1. While conducting a sizeup, you notice that the electrical wires attached to a house have been loosened. While the wires haven't fallen, they are sparking as contact is broken and made again.

   - ☐ The home could collapse.
   - ☐ The live wire could fall.
   - ☐ People could be trapped inside.
   - ☐ The home could catch fire.

2. A home has been moved off of its foundation. What does that mean for CERT members?

   - ☐ Light Damage—CERT members should proceed very cautiously.
   - ☐ Moderate Damage—CERT search and rescue teams will be needed.
   - ☐ Heavy Damage—CERT members should not enter.

Knowledge Review: Answer Key

Instructions: Compare your answers those shown below.

1. While conducting a sizeup, you notice that the electrical wires attached to a house have been loosened. While the wires haven't fallen, they are sparking as contact is broken and made again.

   ☐ The home could collapse.
   ☑ **The live wire could fall.**
   ☐ People could be trapped inside.
   ☑ **The home could catch fire.**

   There is nothing in the scenario to indicate either that the home is subject to collapse or that people could be trapped inside.

2. A home has been moved off of its foundation. What does that mean for CERT members?

   ☐ Light Damage—CERT members should proceed very cautiously.
   ☐ Moderate Damage—CERT search and rescue teams will be needed.
   ☑ **Heavy Damage—CERT members should not enter.**

   CERT members **should not enter this home**. Homes that have been moved off of their foundations are heavily damaged. **CERT members should never enter any structure that has been heavily damaged. Team safety is always the first priority.**

Step 4: Assess Your Situation

Remember that sizeup is a cumulative process. Each step builds on previous steps until a decision can be made about safety and the CERT response. During Step 4 of the sizeup process, CERT members will use everything that they've learned to answer the following questions:

- What problems have been identified?
- What resources are available to apply to these problems while maintaining safe operations?

Resources and Planning Questions

The three types of resources that CERT members need are listed below along with the associated planning questions. The answers to many of these questions may be determined during predisaster drills and activities conducted in your neighborhood or workplace.

Resource	Planning Questions
Personnel	▪ Who lives and/or works in the area? ▪ During which hours are these people most likely to be available? ▪ What skills or hobbies do they have that might be useful for CERT operations? ▪ What might be the most effective means of mobilizing their efforts?
Equipment	▪ What equipment is available locally that might be useful for CERT operations? ▪ Where is it located? ▪ Do you have it or can you get permission to use it? ▪ Can someone operate it safely?
Tools	▪ What tools are available that might be useful for lifting, moving, or cutting disaster debris? ▪ What is available that could be used for splints, backboards, or other medical needs?

Knowledge Review

Instructions: Select the correct answer. When you are finished, turn to the next page to check your answers.

1. At the staging area, the Team Leader presents the following information based on the sizeup.

   - There has been heavy damage to 4 homes and moderate damage to 12 others.
   - Sixteen injured people have been located outside the homes. The extent of their injuries is unknown.
   - Four people are unaccounted for and may be in the heavily damaged homes.
   - Electric lines are down in the area. One home has a wire that is sparking at its point of entry.

   Based on this information, what is the team's first priority?

   - ☐ Locating the four missing people.
   - ☐ Shutting off electricity to the area.
   - ☐ Triaging and treating those known to be injured.
   - ☐ Searching the moderately damaged homes.

2. CERT members are about to enter a moderately damaged building. There is a strong aftershock.

   What does this information tell you about what CERT members should do?

   - ☐ CERT members should go in as planned.
   - ☐ CERT members should withdraw from the area.
   - ☐ CERT members should assess damage from the aftershock before proceeding.
   - ☐ CERT members should split into two teams, with one entering the building and one doing sizeup.

Knowledge Review: Answer Key

Instructions: Compare your answers those shown below.

1. At the staging area, the Team Leader presents the following information based on the sizeup.

   - There has been heavy damage to 4 homes and moderate damage to 12 others.
   - Sixteen injured people have been located outside the homes. The extent of their injuries is unknown.
   - Four people are unaccounted for and may be in the heavily damaged homes.
   - Electric lines are down in the area. One home has a wire that is sparking at its point of entry.

   Based on this information, what is the team's first priority?

   ☐ Locating the four missing people.
   ☐ Shutting off electricity to the area.
   ☑ **Triaging and treating those known to be injured.**
   ☐ Searching the moderately damaged homes.

   Based on the sizeup information, the team's first priority should be **triaging and treating those with known injuries**. CERT resources will be stretched thin on this response, and lifesaving measures are the first priority. After the injured have been triaged and treated, the Team Leader will assign CERT members to accomplish other tasks based on the established priorities and local CERT protocols.

2. CERT members are about to enter a moderately damaged building. There is a strong aftershock.

   What does this information tell you about what CERT members should do?

   ☐ CERT members should go in as planned.
   ☐ CERT members should withdraw from the area.
   ☑ **CERT members should assess damage from the aftershock before proceeding.**
   ☐ CERT members should split into two teams, with one entering the building and one doing sizeup.

   The aftershock may have created an unsafe situation and now the building may have heavy damage. **CERT members should assess additional damage before entering the building.**

Step 5: Establish Priorities

The next step is to determine what should be done, and in what order, based on the principles of:

- CERT member safety as the number one priority.
- Doing the greatest good for the greatest number of people.
- Efficient use of the resources available.

The safety of CERT members is always the first priority and dictates CERT priorities.

Step 6: Make Decisions

Based on the priorities covered in Step 5, the CERT Team Leader makes decisions about what CERTs will do and in what order.

Knowledge Review

Instructions: Next to each potential action, put in the number (1-3) indicating its priority. When you are finished, turn to the next page to check your answers.

- ☐ Provide medical treatment for the injured.
- ☐ Search for missing persons.
- ☐ Address known hazards to CERT members.

Knowledge Review: Answer Key

Instructions: Compare your answers to those shown below.

2 Provide medical treatment for the injured.

3 Search for missing persons.

1 Address known hazards to CERT members.

Providing for CERT member safety is always the highest priority. The next priority is always life safety. The CERT motto, **"Do the greatest good for the greatest number,"** relegates searching for missing persons to a lower priority.

Step 7: Develop Plan of Action

Step 7 is where all of the information gathered about the situation comes together. During this step, the Team Leader decides specifically how the team will conduct its operation, considering the highest priority tasks first.

Written Plan of Action

Simple plans do not need to be written. However, for complex situations, a written plan should be developed. Even a simple written plan will:

- Help maintain focus on established priorities.
- Provide accountability for actions taken, resources applied, and expected outcomes.
- Provide postincident documentation.

You may want to jot down notes. These notes can document changing conditions that require changes to your priorities or plans.

Knowledge Review

Instructions: Select the correct answer. When you are finished, turn to the next page to check your answer.

The incident as it is now known includes:

- **Damage:** Heavy: 4 homes, car in ditch; Moderate: 12 homes, 1 commercial structure
- **Injuries:** 16
- **Missing Persons:** 4
- **Hazards:** Known electrical hazards; threat of thunderstorms
- **Status Unknown:** Condition of possible person in the car in gully
- **CERT Resources:** 16 CERT members at the scene
- **Priorities:** 16 injured: 5-person medical team sent at 2:00 pm to work with 16 injured; runner is to report back to IC at 2:30 with an update of the situation; 2 people sent at 2:10 to put perimeter tape around downed power line; at 2:20, 2 people sent to check gas lines of heavily damaged homes; location of car too dangerous—will inform responders when they arrive.

Would you develop a written plan indicating the location of homes and damage, number injured, car in gully, hazards found, and actions taken?

☐ Yes
☐ No

Knowledge Review: Answer Key

Instructions: Compare your answer to the correct one shown below.

The incident as it is now known includes:

- **Damage:** Heavy: 4 homes, car in ditch; Moderate: 12 homes, 1 commercial structure
- **Injuries:** 16
- **Missing Persons:** 4
- **Hazards:** Known electrical hazards; threat of thunderstorms
- **Status Unknown:** Condition of possible person in the car in gully
- **CERT Resources:** 16 CERT members at the scene
- **Priorities:** 16 injured: 5-person medical team sent at 2:00 pm to work with 16 injured; runner is to report back to IC at 2:30 with an update of the situation; 2 people sent at 2:10 to put perimeter tape around downed power line; at 2:20, 2 people sent to check gas lines of heavily damaged homes; location of car too dangerous—will inform responders when they arrive.

Would you develop a written plan indicating the location of homes and damage, number injured, car in gully, hazards found, and actions taken?

☑ **Yes**
☐ No

A written action plan would be developed. This incident involves a medical response, fire response (for utility shutoff), and possible search and rescue operations. It is complex enough to require a written plan.

Steps 8 & 9: Take Action and Evaluate Progress

During Step 8, CERT members put into action the plan developed during Step 7.

Step 9, Evaluate Progress, is the most critical step. Evaluation focuses on both the effectiveness and safety of the operation.

Remember that sizeup is ongoing. Evaluation results are fed back into the decisionmaking process so that priorities and plans can be updated.

Knowledge Review

Instructions: Select the correct answer. When you are finished, turn to the next page to check your answers.

1. You have addressed the immediate hazards to CERT members and begun triaging the injured. Three victims require immediate treatment. The weather is getting worse. There is lightning in the distance.

   After evaluating your progress to this point, how would you alter your action plan?

   - ☐ Complete search and rescue activities immediately.
   - ☐ Assign additional personnel to medical operations.
   - ☐ Take immediate steps to protect the CERT members and victims.
   - ☐ Conduct rescue activities on the person in the car.

2. You have moved your operation to a covered area that is not in danger of flooding.

   What other changes would you make to your action plan?

   - ☐ Complete search and rescue activities immediately.
   - ☐ Assign additional personnel to medical operations.
   - ☐ Conduct rescue activities on the person in the car.
   - ☐ No changes are necessary.

Knowledge Review: Answer Key

Instructions: Compare your answers to those shown below.

1. You have addressed the immediate hazards to CERT members and begun triaging the injured. Three victims require immediate treatment. The weather is getting worse. There is lightning in the distance.

   After evaluating your progress to this point, how would you alter your action plan?

   - ☐ Complete search and rescue activities immediately.
   - ☐ Assign additional personnel to medical operations.
   - ☑ **Take immediate steps to protect the CERT members and victims.**
   - ☐ Conduct rescue activities on the person in the car.

   Take immediate steps to protect CERT members and victims. This action should be selected because the weather is deteriorating.

   At this point, the highest priority is to ensure the safety of all personnel.

2. You have moved your operation to a covered area that is not in danger of flooding.

   What other changes would you make to your action plan?

   - ☐ Complete search and rescue activities immediately.
   - ☑ **Assign additional personnel to medical operations.**
   - ☐ Conduct rescue activities on the person in the car.
   - ☐ No changes are necessary.

   Assign additional personnel to medical operations. Assigning additional personnel to assist in medical operations is the next highest priority. Given the current weather conditions, other operations would create an unsafe condition for CERT members.

Lesson Summary

This lesson presented the nine steps in the sizeup process.

1. Gather facts.
2. Assess and communicate the damage.
3. Consider probabilities.
4. Assess your own situation.
5. Establish priorities.
6. Make decisions.
7. Develop plans of action.
8. Take action.
9. Evaluate progress.

Sizeup helps us do the greatest good for the greatest number of people while keeping ourselves safe.

Next Lesson

You have completed this lesson. You are now ready to begin Lesson 5: Introduction to Fire Safety.